CPV8540 CompactPCI® Hot Swap PMC Carrier Card

User Manual

CPV8540A/UM1

March 2001

© Copyright 1999, 2001 Motorola, Inc.

All rights reserved.

Printed in the United States of America.

CompactPCI® is a registered trademark of PCI Industrial Computer Manufacturers Group.

Motorola and the Motorola symbol are registered trademarks of Motorola, Inc.

All other products mentioned in this document are trademarks or registered trademarks of their respective holders.

Safety Summary

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual could result in personal injury or damage to the equipment.

The safety precautions listed below represent warnings of certain dangers of which Motorola is aware. You, as the user of the product, should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

Ground the Instrument.

To minimize shock hazard, the equipment chassis and enclosure must be connected to an electrical ground. If the equipment is supplied with a three-conductor AC power cable, the power cable must be plugged into an approved three-contact electrical outlet, with the grounding wire (green/yellow) reliably connected to an electrical ground (safety ground) at the power outlet. The power jack and mating plug of the power cable meet International Electrotechnical Commission (IEC) safety standards and local electrical regulatory codes.

Do Not Operate in an Explosive Atmosphere.

Do not operate the equipment in any explosive atmosphere such as in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment could result in an explosion and cause injury or damage.

Keep Away From Live Circuits Inside the Equipment.

Operating personnel must not remove equipment covers. Only Factory Authorized Service Personnel or other qualified service personnel may remove equipment covers for internal subassembly or component replacement or any internal adjustment. Service personnel should not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, such personnel should always disconnect power and discharge circuits before touching components.

Use Caution When Exposing or Handling a CRT.

Breakage of a Cathode-Ray Tube (CRT) causes a high-velocity scattering of glass fragments (implosion). To prevent CRT implosion, do not handle the CRT and avoid rough handling or jarring of the equipment. Handling of a CRT should be done only by qualified service personnel using approved safety mask and gloves.

Do Not Substitute Parts or Modify Equipment.

Do not install substitute parts or perform any unauthorized modification of the equipment. Contact your local Motorola representative for service and repair to ensure that all safety features are maintained.

Observe Warnings in Manual.

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed. You should also employ all other safety precautions which you deem necessary for the operation of the equipment in your operating environment.

Warning

To prevent serious injury or death from dangerous voltages, use extreme caution when handling, testing, and adjusting this equipment and its components.

Flammability

All Motorola PWBs (printed wiring boards) are manufactured with a flammability rating of 94V-0 by UL-recognized manufacturers.

EMI Caution

Caution

This equipment generates, uses and can radiate electromagnetic energy. It may cause or be susceptible to electromagnetic interference (EMI) if not installed and used with adequate EMI protection.

CE Notice (European Community)

Motorola Computer Group products with the CE marking comply with the EMC Directive (89/336/EEC). Compliance with this directive implies conformity to the following European Norms:

> EN55022 “Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment”; this product tested to Equipment Class B
>
> EN50082-1:1997 “Electromagnetic Compatibility—Generic Immunity Standard, Part 1. Residential, Commercial and Light Industry”

System products also fulfill EN60950 (product safety) which is essentially the requirement for the Low Voltage Directive (73/23/EEC).

Board products are tested in a representative system to show compliance with the above mentioned requirements. A proper installation in a CE-marked system will maintain the required EMC/safety performance.

In accordance with European Community directives, a “Declaration of Conformity” has been made and is on file within the European Union. The “Declaration of Conformity” is available on request. Please contact your sales representative.

Notice

While reasonable efforts have been made to assure the accuracy of this document, Motorola, Inc. assumes no liability resulting from any omissions in this document, or from the use of the information obtained therein. Motorola reserves the right to revise this document and to make changes from time to time in the content hereof without obligation of Motorola to notify any person of such revision or changes.

Electronic versions of this material may be read online, downloaded for personal use, or referenced in another document as a URL to the Motorola Computer Group website. The text itself may not be published commercially in print or electronic form, edited, translated, or otherwise altered without the permission of Motorola, Inc.

It is possible that this publication may contain reference to or information about Motorola products (machines and programs), programming, or services that are not available in your country. Such references or information must not be construed to mean that Motorola intends to announce such Motorola products, programming, or services in your country.

Limited and Restricted Rights Legend

If the documentation contained herein is supplied, directly or indirectly, to the U.S. Government, the following notice shall apply unless otherwise agreed to in writing by Motorola, Inc.

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data clause at DFARS 252.227-7013 (Nov. 1995) and of the Rights in Noncommercial Computer Software and Documentation clause at DFARS 252.227-7014 (Jun. 1995).

Motorola, Inc.
Computer Group
2900 South Diablo Way
Tempe, Arizona 85282

Contents

About This Manual

Summary of Changes xiii
Comments and Suggestions xiii
Conventions Used in This Manual xiv

CHAPTER 1 Introduction

Product Description and Diagrams 1-1
Key Features 1-1
Block and Schematic Diagrams 1-2
Connector Pinouts 1-5

APPENDIX A Related Documentation

Motorola Computer Group Documents A-1
Manufacturers' Documents A-3
Related Specifications A-3
URLs A-4

List of Figures

Figure 1-1. CPV8540 Block Diagram.....1-3
Figure 1-2. PMC Modules to CPV8540 Carrier Card with Connectors Labeled 1-4

List of Tables

Table 1-1. CPCI J3 User I/O Connector Pinout 1-5
Table 1-2. CPCI J5 User I/O Connector Pinout 1-5
Table 1-3. PCI Interface Connector Pinout:
P11/J11, P21/J21 32-bit PCI 1-6
Table 1-4. PCI Interface Connector Pinout:
P12/J12, P22/J22 32-bit PCI 1-7
Table 1-5. PCI Interface Connector Pinout:
P14/J14, P24/J24 User-Defined I/O 1-9
Table 1-6. PCI 64-bit PCI extension on PMC Connector J13, J23 1-10
Table A-1. Motorola Computer Group Documents A-1
Table A-2. Manufacturers' Documents A-3
Table A-3. Related Specifications A-3

About This Manual

The *CPV8540 CompactPCI Hot Swap PMC Carrier Card User Manual* provides a brief description and overview of this product. (PCI stands for Peripheral Component Interconnect and PMC stands for PCI Mezzanine Card.) The Manual also provides you with tables that include all the connector pinout information needed to attach one or two PMC mezzanine modules to the carrier card. This document should be used by anyone attaching PMC modules to this card.

Summary of Changes

The following table lists changes made to this document since its last release.

Date	Changes
February 2001	The CPV8540 allows only 32-bit PCI transfers. For more information, please refer to the Note on page 1-1.

Comments and Suggestions

Motorola welcomes and appreciates your comments on its documentation. We want to know what you think about our manuals and how we can make them better. Mail comments to:

Motorola Computer Group
Reader Comments DW164
2900 S. Diablo Way
Tempe, Arizona 85282

You can also submit comments to the following e-mail address:
reader-comments@mcg.mot.com

In all your correspondence, please list your name, position, and company. Be sure to include the title and part number of the manual and tell how you used it. Then tell us your feelings about its strengths and weaknesses and any recommendations for improvements.

Conventions Used in This Manual

The following typographical conventions are used in this document:

bold

is used for user input that you type just as it appears; it is also used for commands, options and arguments to commands, and names of programs, directories and files.

italic

is used for names of variables to which you assign values. Italic is also used for comments in screen displays and examples, and to introduce new terms.

`courier`

is used for system output (for example, screen displays, reports), examples, and system prompts.

<**Enter**>, <**Return**> or <**CR**>

<**CR**> represents the carriage return or Enter key.

CTRL

represents the Control key. Execute control characters by pressing the Ctrl key and the letter simultaneously, for example, **Ctrl-d**.

Introduction 1

This *manual* provides a brief description and overview of the CPV8540 CompactPCI Hot Swap PMC Carrier Card together with the connector pinout information needed to attach one or two PMC mezzanine modules to the card. PCI stands for *Peripheral Component Interconnect* and PMC stands for *PCI Mezzanine Card*.

Note The CPV8540 only allows 32-bit PCI transfers between itself and the CompactPCI bus. This product is being replaced by Motorola's CPV8540B, which supports 64-bit PCI transfers.

Product Description and Diagrams

The CPV8540 provides connectivity to a wide variety of video, ATM, analog, serial, and many other functions. The 8540 is a 6U CompactPCI carrier card for IEEE P1386.1 compliant PMC modules. The board supports one double-width or two single-width PMC mezzanine modules.

Once connected, the modules are accessed via front panel connections. In addition, I/O lines are brought out to the carrier card's rear 2mm pin and socket connectors, allowing rear panel connections in systems such as the CPX8216 HA chassis.

Key Features

The CPV8540:

- Supports standard (IEEEP1386.1) PMC mezzanine modules
- Holds one double-width or two single-width modules
- All PMC I/Os are brought out to the front panel and to rear connectors
- Single CompactPCI load via DEC 21154 bridge

- Supports 5.0 or 3.3 volt PMC modules
- Supports Plug and Play

Card ID: The CPV8540 reports itself to the system as a bridge chip with the PMC functions behind it.

Block and Schematic Diagrams

The following two figures provide overviews of the card.

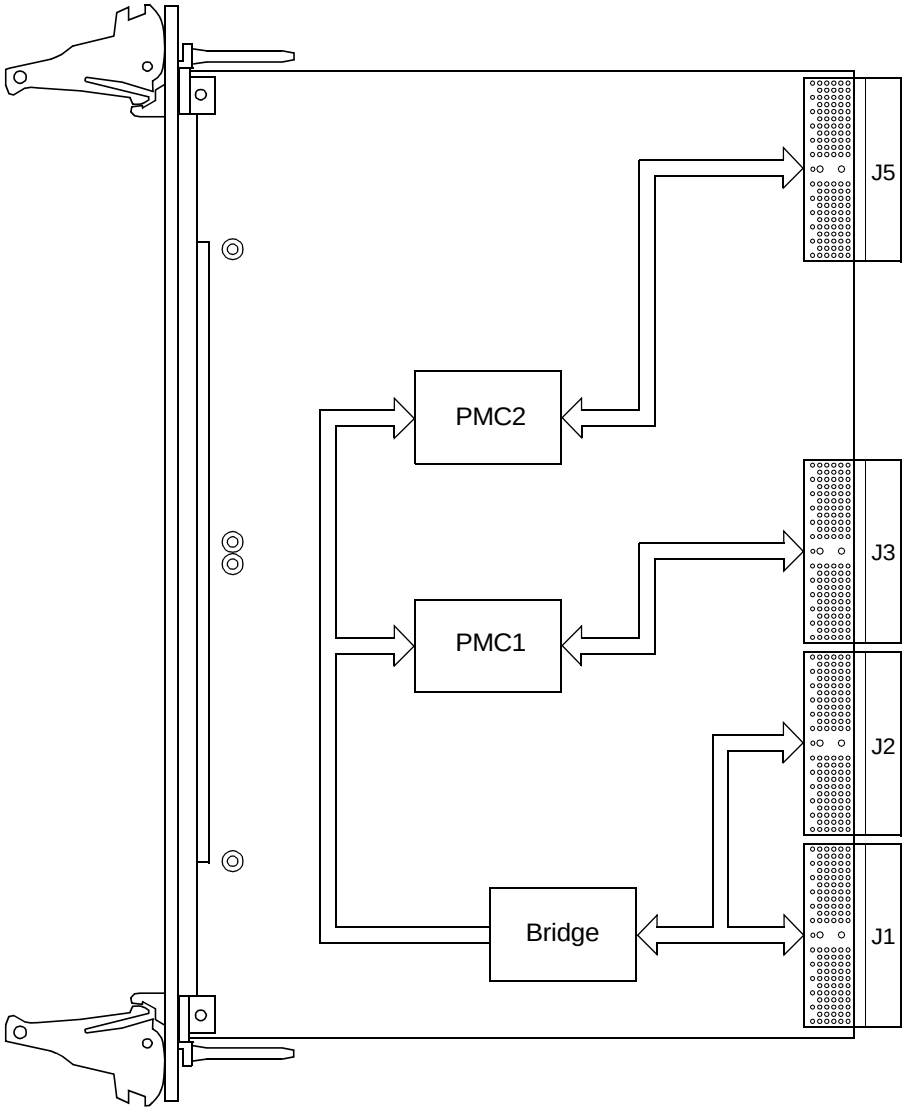

Figure 1-1. CPV8540 Block Diagram

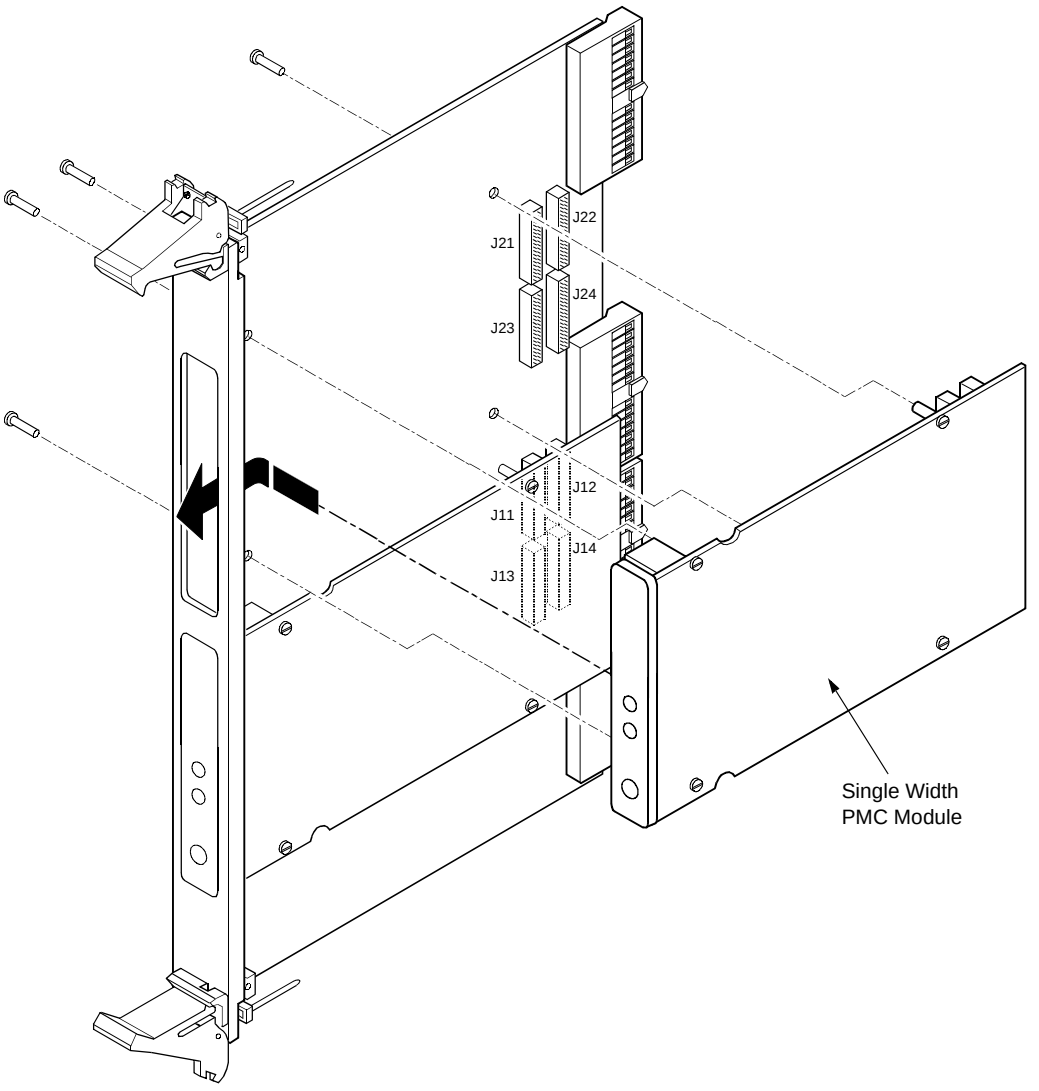

Figure 1-2. PMC Modules to CPV8540 Carrier Card with Connectors Labeled

Connector Pinouts

The tables in this section provide the connector pinout information needed to attach one or two PMC mezzanine modules to the carrier card.

Table 1-1. CPCI J3 User I/O Connector Pinout

	ROW A	ROW B	ROW C	ROW D	ROW E	
14	+3.3V	+3.3V	+3.3V	+5V	+5V	14
13	PMC1IO5	PMC1IO4	PMC1IO3	PMC1IO2	PMC1IO1	13
12	PMC1IO10	PMC1IO9	PMC1IO8	PMC1IO7	PMC1IO6	12
11	PMC1IO15	PMC1IO14	PMC1IO13	PMC1IO12	PMC1IO11	11
10	PMC1IO20	PMC1IO19	PMC1IO18	PMC1IO17	PMC1IO16	10
9	PMC1IO25	PMC1IO24	PMC1IO23	PMC1IO22	PMC1IO21	9
8	PMC1IO30	PMC1IO29	PMC1IO28	PMC1IO27	PMC1IO26	8
7	PMC1IO35	PMC1IO34	PMC1IO33	PMC1IO32	PMC1IO31	7
6	PMC1IO40	PMC1IO39	PMC1IO38	PMC1IO37	PMC1IO36	6
5	PMC1IO45	PMC1IO44	PMC1IO43	PMC1IO42	PMC1IO41	5
4	PMC1IO50	PMC1IO49	PMC1IO48	PMC1IO47	PMC1IO46	4
3	PMC1IO55	PMC1IO54	PMC1IO53	PMC1IO52	PMC1IO51	3
2	PMC1IO60	PMC1IO59	PMC1IO58	PMC1IO57	PMC1IO56	2
1	V(I/O)	PMC1IO64	PMC1IO63	PMC1IO62	PMC1IO61	1
NOTE: PMC1IO* signals are those connected to the lower PMC Slot, or Slot 1.						

Table 1-2. CPCI J5 User I/O Connector Pinout

	ROW A	ROW B	ROW C	ROW D	ROW E	
13	PMC2IO5	PMC2IO4	PMC2IO3	PMC2IO2	PMC2IO1	13
12	PMC2IO10	PMC2IO9	PMC2IO8	PMC2IO7	PMC2IO6	12
11	PMC2IO15	PMC2IO14	PMC2IO13	PMC2IO12	PMC2IO11	11
10	PMC2IO20	PMC2IO19	PMC2IO18	PMC2IO17	PMC2IO16	10
9	PMC2IO25	PMC2IO24	PMC2IO23	PMC2IO22	PMC2IO21	9
8	PMC2IO30	PMC2IO29	PMC2IO28	PMC2IO27	PMC2IO26	8

Table 1-2. CPCI J5 User I/O Connector Pinout (Continued)

7	PMC2IO35	PMC2IO34	PMC2IO33	PMC2IO32	PMC2IO31	7
6	PMC2IO40	PMC2IO39	PMC2IO38	PMC2IO37	PMC2IO36	6
5	PMC2IO45	PMC2IO44	PMC2IO43	PMC2IO42	PMC2IO41	5
4	PMC2IO50	PMC2IO49	PMC2IO48	PMC2IO47	PMC2IO46	4
3	PMC2IO55	PMC2IO54	PMC2IO53	PMC2IO52	PMC2IO51	3
2	PMC2IO60	PMC2IO59	PMC2IO58	PMC2IO57	PMC2IO56	2
1	V(I/O)	PMC2IO64	PMC2IO63	PMC2IO62	PMC2IO61	1
NOTE: PMC2IO* signals are those connected to the upper PMC Slot, or Slot 2.						

Table 1-3. PCI Interface Connector Pinout: P11/J11, P21/J21 32-bit PCI

Pin#	Signal Name	Signal Name	Pin #
1	TCK	-12V	2
3	GND	INTA#	4
5	INTB#	INTC#	6
7	BUSMODE1#	+5V	8
9	INTD#	PCI-RSVD*	10
11	GND	PCI-RSVD*	12
13	CLK	GND	14
15	GND	GNT#	16
17	REQ#	+5V	18
19	V(I/O)	AD[31]	20
21	AD[28]	AD[27]	22
23	AD[25]	GND	24
25	GND	C/BE[3]#	26
27	AD[22]	AD[21]	28
29	AD[19]	+5V	30
31	V(I/O)	AD[17]	32
33	FRAME#	GND	34

Table 1-3. PCI Interface Connector Pinout: P11/J11, P21/J21 32-bit PCI (Continued)

Pin#	Signal Name	Signal Name	Pin #
35	GND	IRDY#	36
37	DEVSEL#	+5V	38
39	GND	LOCK#	40
41	SDONE#	SBO#	42
43	PAR	GND	44
45	V(I/O)	AD[15]	46
47	AD[12]	AD[11]	48
49	AD[09]	+5V	50
51	GND	C/BE[0]#	52
53	AD[06]	AD[05]	54
55	AD[04]	GND	56
57	V(I/O)	AD[03]	58
59	AD[02]	AD[01]	60
61	AD[00]	+5V	62
63	GND	REQ64#	64

Table 1-4. PCI Interface Connector Pinout: P12/J12, P22/J22 32-bit PCI

Pin#	Signal Name	Signal Name	Pin #
1	+12V	TRST#	2
3	TMS	TDO	4
5	TDI	GND	6
7	GND	PCI-RSVD*	8
9	PCI-RSVD*	PCI-RSVD*	10
11	BUSMODE2#	+3.3V	12
13	RST#	BUSMODE3#	14
15	+3.3V	BUSMODE4#	16

Table 1-4. PCI Interface Connector Pinout: P12/J12, P22/J22 32-bit PCI (Continued)

Pin#	Signal Name	Signal Name	Pin #
17	PCI-RSVD*	GND	18
19	AD[30]	AD[29]	20
21	GND	AD[26]	22
23	AD[24]	+3.3V	24
25	IDSEL	AD[23]	26
27	+3.3V	AD[20]	28
29	AD[18]	GND	30
31	AD[16]	C/BE[2]#	32
33	GND	PMC-RSVD	34
35	TRDY#	+3.3V	36
37	GND	STOP#	38
39	PERR#	GND	40
41	+3.3V	SERR#	42
43	C/BE[1]#	GND	44
45	AD[14]	AD[13]	46
47	GND	AD[10]	48
49	AD[08]	+3.3V	50
51	AD[07]	PMC-RSVD	52
53	+3.3V	PMC-RSVD	54
55	PMC-RSVD	GND	56
57	PMC-RSVD	PMC-RSVD	58
59	GND	PMC-RSVD	60
61	ACK64#	+3.3V	62
63	GND	PMC-RSVD	64

Table 1-5. PCI Interface Connector Pinout: P14/J14, P24/J24 User-Defined I/O

Pin#	Signal Name	Signal Name	Pin #
1	I/O	I/O	2
3	I/O	I/O	4
5	I/O	I/O	6
7	I/O	I/O	8
9	I/O	I/O	10
11	I/O	I/O	12
13	I/O	I/O	14
15	I/O	I/O	16
17	I/O	I/O	18
19	I/O	I/O	20
21	I/O	I/O	22
23	I/O	I/O	24
25	I/O	I/O	26
27	I/O	I/O	28
29	I/O	I/O	30
31	I/O	I/O	32
33	I/O	I/O	34
35	I/O	I/O	36
37	I/O	I/O	38
39	I/O	I/O	40
41	I/O	I/O	42
43	I/O	I/O	44
45	I/O	I/O	46
47	I/O	I/O	48
49	I/O	I/O	50
51	I/O	I/O	52
53	I/O	I/O	54

Table 1-5. PCI Interface Connector Pinout: P14/J14, P24/J24 User-Defined I/O (Continued)

Pin#	Signal Name	Signal Name	Pin #
55	I/O	I/O	56
57	I/O	I/O	58
59	I/O	I/O	60
61	I/O	I/O	62
63	I/O	I/O	64

The final table, shown below, presents the last 32 bits needed to complete the 64-bit extension.

Table 1-6. PCI 64-bit PCI extension on PMC Connector J13, J23

Pin#	Signal Name	Signal Name	Pin #
1	-	GND	2
3	GND	C/BE7#	4
5	C/BE6#	C/BE5#	6
7	C/BE4#	GND	8
9	V(I/O)	PAR64	10
11	AD63	AD62	12
13	AD61	GND	14
15	GND	AD60	16
17	AD59	AD58	18
19	AD57	GND	20
21	V(I/O)	AD56	22
23	AD55	AD54	24
25	AD53	GND	26
27	GND	AD52	28
29	AD51	AD50	30
31	AD49	GND	32
33	GND	AD48	34
35	AD47	AD46	36

Table 1-6. PCI 64-bit PCI extension on PMC Connector J13, J23 (Continued)

Pin#	Signal Name	Signal Name	Pin #
37	AD45	GND	38
39	V(I/O)	AD44	40
41	AD43	AD42	42
43	AD41	GND	44
45	GND	AD40	46
47	AD39	AD38	48
49	AD37	GND	50
51	GND	AD36	52
53	AD35	AD34	54
55	AD33	GND	56
57	V(I/O)	AD32	58
59	-	-	60
61	-	GND	62
63	GND	-	64

Related Documentation A

Motorola Computer Group Documents

The Motorola publications listed below offer you additional information about this product. You can obtain paper or electronic copies of Motorola Computer Group publications by:

- Visiting Motorola Computer Group's Product Catalog for more information on PMC products at, http://www.motorola.com/computer/literature
- Contacting your local Motorola sales office
- Visiting Motorola Computer Group's World Wide Web literature site, http://www.motorola.com/computer/literature

To obtain the most up-to-date product information in PDF or HTML format, visit http://www.motorola.com/computer/literature.

Manufacturers' Documents

For additional information, refer to the following table for manufacturers' data sheets or user's manuals. As an additional help, a source for the listed document is provided. Please note that, while these sources have been verified, the information is subject to change without notice.

Table A-1. Manufacturers' Documents

Document Title	Motorola Publication Number
21154 PCI-to-PCI Bridge Data Sheet; Intel Corporation http://developer.intel.com/design/bridge/datashts/278108.htm	278108.pdf

Related Specifications

For additional information, refer to the following table for related specifications. As an additional help, a source for the listed document is provided. Please note that, while these sources have been verified, the information is subject to change without notice.

Table A-2. Related Specifications

Document Title	Motorola Publication Number
CompactPCI Hot Swap Specification PCI Industrial Computers Manufacturers Group (PICMG) http://www.picmg.org/	PICMG 2.1 R1.0
IEEE - PCI Mezzanine Card Specification (PMC) Institute of Electrical and Electronics Engineers, Inc. http://standards.ieee.org/catalog/	P1386.1 Draft 2.0

URLs

The following URLs (uniform resource locators) may provide helpful sources of additional information about this product, related services, and development tools. Please note that, while these URLs have been verified, they are subject to change without notice.

- Motorola Computer Group, http://www.motorola.com/computer
- Motorola Computer Group OEM Services, http://www.motorola.com/computer/support